

## **SCHEDULE B ANNEXURE 1**

### **BROAD SCOPE OF WORK INCLUDING PROJECT BRIEF & PROJECT FACILITIES**

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## **1. Project Description and background**

### **1.1. Location**

The project “India International Convention & Expo Centre” (IICC) site is located in Sector 25 of Dwarka Sub City within national Capital territory of Delhi. The site is flanked by Dwarka Expressway towards its East, Urban Extension Road I towards North, Master Plan Green towards South and mix of un-acquired land and commercial land towards west. There are a 3 access road to the complex from 60mts wide arterial road towards West of the site.

### **1.2. Project Background**

The Department of Industry Policy and Promotion (DIPP) through Delhi Mumbai Industrial Corridor Development Corporation Limited (DMICDC) is coming up with a State-of-the-Art, largest International Exhibition and Convention Centre in Delhi. The proposed project is planned over 89.72 Hectare of land in Sector 25 Dwarka, New Delhi. This Complex will comprise of world class infrastructure facilities related to trade promotions activities, conventions, conferences, exhibitions, corporate meetings, specialised events and Arena.

The project vision is to create a state-of-the-art, world class Exhibition and Convention Center for India. The facilities will be at par with the best in the industry worldwide, in size and ambiance; offering an efficient and quality setting for international as well as national meetings, conferences, exhibitions and trade shows. The project is envisioned to be on a scale of a Central Business District (CBD) with supporting retail space, commercial office space, hospitality, and entertainment and lifestyle opportunities for end-users.

The quality of businesses, facilities and lifestyle amenities provided will determine the positioning of the IICC and play an important role in attracting national and international events to locate here. The IICC development will therefore consist of a best-in-class Exhibition and Convention Center facility, multi-use Arena and supporting Hospitality and commercial district facilities as part of the overall mixed-use development. The proposed development over 89.72 Ha. of site with a FAR of 120 will include Exhibition space, Convention area, approximately 3500 keys hotels (multiple), commercial office and retail space and a 20,000 capacity multi-purpose Arena. This IICC District will be an anchor project within the National capital and will act as a catalyst in growth of Industrial development in the Country.

The complete project will be delivered through two distinct models. Exhibition and Convention Centre including the trunk infrastructure will be delivered on Design Build or EPC model and the entire mixed use including hotels, retail, commercial and 20,000 capacity Arena will be developed on PPP model.

The project also has a dedicated metro station which is located on an extension of the Airport High Speed Metro corridor. The design and construction of all metro related infrastructure is being undertaken by Delhi Metro Rail Corporation (DMRC). The station and metro corridor within the site will be underground.

Though the project will be developed in Phases but the master plan by “Preliminary Engineering Architecture Consultants” (PEAC) has been prepared for the ultimate Phase. This includes:

I.	Exhibition Halls –	3,03,000 Sq.m.
II.	Convention Centre	60,000 Sq.m.
III.	Arena	50,000 Sq.m.
IV.	Govt./ Administrative Offices	15,000 Sq.m.

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- V. Commercial (Office + Retail) 3,82,000 Sq.m.
- VI. Hospitality 2,60,000 Sq.m.
- VII. Parking in basement 28,000 Equivalent Car Space (ECS)
- VIII. All support infrastructure including utilities and amenities required to make this complex functional.

The areas mentioned above are FAR areas.

The project is already in advance stages of obtaining all statutory approvals. The project has already been accorded approval from Environment Appraisal Committee, Ministry of Environment and Forest. Approval for cutting of trees and height clearances for permissible height of structures on site has been obtained from concerned authorities. Consent to Establish from Delhi Pollution Control Committee (DPCC) and transportation plan from UTTIPEC is in process. Dedicated connections from Dwarka Expressway and Urban Extension road have been approved by National Highway Authority of India (NHAI) and all related infrastructure provisions are being finalised for execution. The complex will have municipal water supply from Delhi Jal Board and power supply from BSES. DMICDC has already sought related approvals.

Once commissioned, the complex will be state of the art Exhibition Complex with all amenities for holding national/ international events.

### **1.3. Project Goals**

DMICDC is seeking proposal from qualified EPC Contractors to perform the scope of Services outlined below. Broad Objectives of the assignment are:

- I. To design and construct a “State-of-the Art”, “World Class” and most sophisticated Exhibition and Convention complex with an iconic design showcasing the diverse and rich Art and Culture of India.
- II. To prepare detailed design and construction documentation for the Phase I development. The design will be strictly compliant to all applicable building codes and incorporating IGBC Green Campus Platinum Certification approach. The objective is to construct first of its kind IGBC Platinum compliant Exhibition and Convention complex.
- III. Construction of Phase I ensuring its seamless and uninterrupted merger with subsequent Phases with respect to buildings, infrastructure augmentation, infrastructure provisions and infrastructure connections to future buildings. The Phase I design and construction should integrate all external and internal infrastructures for smooth functioning of the entire complex upon commissioning. The construction will include all external and internal finishing works including all required fixtures (mechanical, electrical and plumbing), architectural finishes (doors, windows, glazing, murals, artefacts, false ceiling, steps, staircases etc.) complete ICT network, complete landscape including automated irrigation systems and drainage systems, complete perimeter control including boundary wall and automated gates with Gate houses (Every gate must have a separate pedestrian and vehicular access and every gate house is to be equipped with IT network, rest area and toilets).and any other related building element without which any of the required function of the complex does not work to its full efficiency.
- IV. The Phase I once completed should portray as one completed standalone complex and should not give an impression of half built complex.

### **1.4. Components of Phase 1**

The project includes the following components in Phase 1 which is to be completed on EPC basis in a Total of 20 Months. It may be noted that the EPC Contractor’s Scope of works will be for Phase 1 only. The Areas, Details etc. mentioned for the Phase 2 development herein are only indicative and

for information purposes and for completing works in all respects for the Phase-I battery limits . However the EPC Contractor should ensure that the design and construction works under the Scope of work assigned under this Tender document shall seamlessly integrate with subsequent works as proposed for Phase II and any other later Phase, which may be decided from time to time. The Scope of works for Phase 1 includes the following works complete in all respect including, but not limited to Civil & structures, Architecture, interior and exterior finishes, all MEP Services, ICT & Audio Visual, Landscaping, Lighting etc. all complying to IGBC Campus Platinum rating;

- I. Convention Centre Building with a total capacity of minimum 11000 persons with built up area of 73,195 Sq.m.
- II. Exhibition Halls 1 and 2 with a total built up area of 82,813 Sq.m
- III. Grand Foyer for Exhibition Halls 1 and 2 including development on Ground floor and above floor with built up area. 22,217 Sq.m..
- IV. Development of open Exhibition Area of minimum (19,500 Sqm).
- V. Development of Central Boulevard and Plaza along with interface structures/landscape elements for Metro station and Metro subway tunnel.
- VI. Exhibition Hall 3 - This would include design and construction of the two level Basement (for the Services Plant Rooms) and Ground Floor level along with all design provisions for future construction of the double storeyed Exhibition Hall. The structure of Exhibition Hall 3 shall be planned in such a way that the structural cores/columns & foundations can take the loads of Exhibition Hall-3 when developed.
- VII. Minimum number of car parking amounting to 3032 ECS shall be accommodated under all the basements proposed to be constructed for phase-1. These include:
  - a. Three (03) level basements parking and services under the Grand Foyer adjoining Exhibition Halls 1 & 2.
  - b. Four (04) level basements Parking and Services adjoining the Convention Centre.
- VIII. All ramps and entry/ exits to the basement as identified in the tender drawings.
- IX. All services including but not limiting to:
  - a. Underground tunnel access to Grand Foyer, Convention Centre, basement parking adjoining to Convention Centre which will also have provision to connect Arena in subsequent Phase of Construction.
  - b. Two (02) nos. 66/11KV Grid Substation Buildings (with GIS equipment).
  - c. DG Set underground Building with Cooling Towers at Roof Top including all civil structure required for DG Sets including exhaust chimney structure and overhead water tanks
  - d. Central Control & Command Centres for the project.
    - Command and Operations Control Centre
    - Engineering Control Centre
  - e. HSD Yard and associated structures for 2nos x 70 KL each HSD Tanks
  - f. Disaster Management Centre Building with Fire Station and Medical Centre.

- g. Underground RCC Service Gallery of minimum size 9m x 3m connecting all the buildings of Phase-1 & Phase-2 including MUD buildings to the Basement Plant Room under Exhibition Hall 3.
  - h. Service gallery shall house chiller water line, Gas line, optical fibres lines, Water lines, Electrical power cables, treated water lines, irrigation water lines, Hot water lines, Yard hydrant line, Hydrant line, Solid waste management line, HSD distribution line, etc.
  - i. HVAC Plant, STP, Fire Water tank & Potable Water Treatment Plant & tank, Treated water tanks and associated pump & Plant room, Pneumatic Solid waste management (collection & disposal) etc. located in the basement under Exhibition Hall-3.
  - j. Laying of the 66 KV Transmission Lines from the nearest Power Supply Substation;  
The EPC Contractor has to coordinate with BSES Rajdhani Pvt. Ltd. for the laying, installation and termination of the 66KV Grid cable upto the GIS substation buildings. The work shall be executed by BSES Rajdhani Pvt. Ltd. on deposit work basis and the amount for the same would be paid directly to BSES Rajdhani Pvt. Ltd. by the Client”.
- X. Boundary Wall and Gates – Minimum 2.4 meter High Solid wall and 0.9 m high electric fence on top.
- XI. Signage and way finding graphics at appropriate locations on the exterior and interior of the various buildings. The design and detailing shall be as per the specifications laid out in the Tender document.
- XII. Landscaping, (softscape including planting and hardscape) for work area as per scope of work :
- a. Fountains, Water Bodies, Plazas, pergolas, canopies, etc. for the site. This shall include the entire area demarcated for Infrastructural Development in Phase-1 as per tender drawings and details provided in the Tender document.
  - b. All irrigation and drainage works to ensure minimum maintenance of entire softscape including planting and hardscape area during operation Phase.
  - c. Road, Pavement, pathways, Signage, Street Furniture, etc. for the entire complex i.e. for Phase-1 & Phase-2. EPC Contractor shall ensure that every building in the complex has a planned road connection.
  - d. All Electrical & Lighting works.
  - e. Graphics, Art and Sculpture including Accents etc.
- XIII. The extension of the metro line by DMRC from the Dwarka Sector-25 station, from eastern to western side of the site is also planned. The proposed alignment of the Metro line, which would be falling under the Exhibition Hall 3 and a strip of minimum 24m width shall infringe with the entire length of the Exhibition Hall 3. This portion of the land falling under Exhibition Hall-3, would be made available to the EPC Contractor for construction activity after July 2018.

### **1.5. Convention Center**

The Convention Centre is proposed as a contemporary facility for global and national level meetings and conferences. As the designated venue for the proposed SAARC and G-20 Summits in India, it is envisaged to be an iconic symbol of the country’s architectural repository. The scope of the EPC

Contractor is Detailed Design and Construction of the entire Convention Centre. The Convention centre once completed, shall have a capacity of 11,000 people when all meeting rooms, auditorium and ball room are occupied at any given time.

The Convention Centre pivots around the main auditorium of 6000 capacity which will have all facilities to host events for full capacity or multiple events in smaller halls after dividing the main hall through flexible partitions.

As part of the whole Convention centre complex, the major areas to be designed and constructed as per the details, drawings and specifications provided in the RFP document are:

- I. Auditorium Hall (minimum 6000 capacity)
- II. 13 meeting rooms
- III. Grand Ball room (minimum 2400 capacity)
- IV. Cafeteria restaurants and kitchens
- V. Administrative office
- VI. Backstage areas
- VII. Dignitaries Areas
- VIII. Common Public areas
- IX. Service Areas
- X. Entrance Plaza, Spill Out Area & Terraces

#### *1.5.1. Auditorium Main Hall*

The principal component of the Events area is the 6000-seat Auditorium Main Hall. By virtue of its capacity, this Hall will be the largest one in Asia when built. The Auditorium is to be used as a hired venue for Plenary Session, overflow to Plenary Hall, Break Out Sessions, State Dinners/ Catered Functions, Conferences, Training, Trade Presentation, Corporate Presentation, Cultural Presentations excluding Play, Live Musical Performances excluding Heavy Metal and Rock, classical concerts, Event Shows, Weddings, Fashion Shows etc. The Hall needs Green Rooms and other Back of the House Facilities/spaces and storage as required, at the Rear for supporting all the events as per above.

The Auditorium should have a flexible design such that it can seat 6000 people in one volume over several levels with the stage at one end, or, be divisible into two halls of 4000 and 2000 capacity each by means of a vertical retractable/foldable acoustic partition, in which case the stage will be in the centre. The two configurations are demonstrated in the Design Intent Report enclosed as part of Tender Document.

The seating comprises of three types of systems – fixed, retractable and removable as illustrated in the Design Intent Report enclosed as part of Tender Document. Out of the 6000 seats, the front row seats (approx. 2178) are proposed to be of retractable and rotating seating technology. In addition, a further 1080 seats would be detachable/removable in addition to being of retractable and rotating technology. The seats should be rotatable – upto 180 degree in vertical rotation and upto 360 degree in horizontal rotation) to create the possibility of different configurations as illustrated in the Report.

The contractor shall ensure complete vetting of the design, including but not limited to, sight lines, spacing between rows, height of stage, number of seats in a row, number of rows, seating configuration, balcony slope, evacuation routes, etc. as per relevant International codes.

The hall acoustics have to be carefully designed to maintain the acoustic levels as defined in the detail Design Intent Report & specifications.

Detail design for the Auditorium shall include design of all required Audio Visual, ICT, lighting, seating and sound equipment as per the detail specification provided in the Tender document. All



the finalised equipment shall be approved by PMC/ Employer before procurement by the EPC Contractor. The scope of work for the EPC Contractor shall include complete functionality of complete auditorium including the sub zones after rolling down flexible partitions once completed. EPC Contractor shall not miss on any necessary equipment which at the time of commissioning pose hindrance to its operations.

#### 1.5.2. Conference Rooms

There are 13 conference rooms of varying capacities dispersed over the multiple levels of the Convention Centre. The Conference rooms to be provided are of following approximate areas:

- 1 Room of 1290 sqm,
- 1 Room of 346 sqm,
- 1 Room of 229 sqm,
- 1 Room of 304 sqm,
- 1 Room of 312 sqm,
- 1 Room of 320 sqm,
- 1 Room of 230 sqm,
- 1 Room of 135 sqm,
- 1 Room of 370 sqm,
- 2 Rooms of 146 sqm,
- 1 Room of 112 sqm
- 1 room of 102 sq m

The Conference rooms shall be provisioned with flexible movable partitions for operating smaller events and meetings. The rooms have to be designed to accommodate multiple seating arrangements as per the requirement of event..

The rooms are provided with mobile partitions closets which will need to be designed and detailed out. All the Conference rooms should be acoustically sound proofed both by means of wall and ceiling treatment. For drawings of the wall panels and ceiling material, reference must be made to the details provided in Tender Document. A description of the acoustical ceiling has also been made in the Special Items section of the Tender Package which again must be made note of for further elaboration.

Each Conference room is provided with an Interpreter Booth. All Interpreter Booths must be designed in sufficient detail to ensure their seamless functionality.. There are associated lounges and waiting rooms as well with these rooms which also need to be detailed out as per the Tender drawings and specifications mentioned in the Tender Document.

Detail design for the Conference rooms shall include design of all required Audio Visual, ICT, lighting, seating and sound equipment, AC control panels and all other associated equipment/ materials as per the detail specification provided in the Tender Document. All the finalised equipment shall be approved by PMC/ Employer before procurement by the EPC Contractor. The scope of work for the EPC Contractor shall include complete functionality of each of the rooms once completed. EPC Contractor shall not miss on any necessary equipment which at the time of commissioning pose hindrance to its operations.

#### 1.5.3. Grand Ball Room

A Grand Ball Room of capacity 2400 Pax has been planned on the sixth floor of the building, divisible at least into three halls. Attached to the hall, there is an open terrace which can be used as an extension of Ball room as a cocktail area. Enough storage for furniture for the different usages has to be provided through mobile partition closets. Alternate seating arrangements have been planned for this space as illustrated in the Design Intent Report.

The Grand Ball room is provided with Interpreter Booths. All Interpreter Booths must be designed in sufficient detail to ensure their seamless functionality.

The Ball room should meet all standards of acoustic design for similar spaces. Sufficient sound proofing both by means of wall and ceiling treatment should be provided as detailed out in the Tender Document.

#### 1.5.4. Cafeteria with kitchen

The Cafeteria, Restaurant, various Kitchens and finishing kitchens provided aim to manage the food and beverage requirements of the various events. The detail design for the restaurant and kitchens should conform to internationally accepted space standards. These spaces are to be adequately designed and detailed by the EPC Contractor including, but not limited to, provision of electrical points, cabinetry, utilities and wet points. The distribution of these spaces in the Convention Center is as follows:

- I. There is a cafeteria with an attached kitchen having serving capacity of approx. 250 pax proposed on the first floor. Cafeteria having minimum area approx 242sqm & Kitchen having minimum area approx 146 sqm.
- II. A restaurant with a finishing kitchen/attached kitchen planned to serve approx. 175 persons is located on the second floor of the building. The restaurant has an exterior terrace attached to it. Restaurant shall have minimum area approx 642 sqm and Kitchen shall have minimum area approx 129 sqm.
- III. Finishing kitchen having minimum area approx. 37 sqm to prepare beverage (coffee & tea) and serve/maintain warm the brought in cooked food are located in multiple levels of the building.
- IV. Main Kitchen located at 5th floor level with area of approx. 440 sqm.

#### 1.5.5. Administrative Offices

The fifth floor of the building is dedicated to the administrative offices of the Convention Centre. The layout is a combination of open plan and enclosed workspace planning. The detail design of offices shall include design of all required Audio Visual, ICT, lighting, seating and sound equipment, AC control panels and all other associated equipment/ materials as per the detail specification provide in the Tender document. All the finalised equipment shall be approved by PMC/ client before procurement by the contractor. The scope of work for the contractor shall include complete functionality of each of the rooms once completed. Contractor shall not miss on any necessary equipment which at the time of commissioning pose hindrance to its operations.

#### 1.5.6. Main Auditorium Back Stage area

The backstage area comprises a host of ancillary and service functions which support the function of the Auditorium Main Hall. The components in the Backstage Area have been zoned keeping in mind certain functional relationships.

The components of these Backstage Areas are as follows.

- Artist waiting area

- Artist circulation & Artist vertical core
- Changing rooms
- Green rooms
- Changing Rooms
- Orchestra changing rooms
- Choir changing rooms
- Toilets
- Costume room
- Rehearsal rooms

Backstage and Artists area components are at -6.40m level, which is a Mezzanine of the Second Basement Level. The detailed design must incorporate measures for ensuring light and Air Conditioning of these areas as they are habitable spaces.

#### 1.5.7. Dignitaries Areas

As the Convention Centre is envisaged to host International and National Level summits and conferences, it is envisioned to be host to a large number of dignitaries. Safeguarding of dignitaries is a key concern and therefore planning of the area dedicated for them is a unique feature of the Convention Centre.

With this objective, these areas have been planned with a view to segregate the dignitaries from the general public. The components of the Dignitaries Areas broadly include the following:

- Lounge
- Dressing room
- Toilets
- Circulation

The detailed design must ensure adherence to all parameters for these spaces specified in the Tender document including Design Basis Report, Technical Specifications and Tender drawings.

#### 1.5.8. Common public areas

The common public areas of the building form the most significant part of the building as this interface is the most visible to the common visitors. The planning of these areas has followed certain principles which must be adhered to.

This includes the spaces designated for public use and includes zones of entry, waiting and movement. The components of the public service area include:

- Access to the building/lobbies/circulation spaces such as corridors, etc.
- Ticket office and information
- Safeguarding check and frisking areas
- Reception
- Cloakrooms
- Vertical movement cores
- Lounges
- Toilets
- Resting areas

The minimum number of escalators and elevators count in the public lobbies is provided in the tender document however this should be ratified by a simulation modelling of the vertical carrying capacity of these systems vis-a-vis the total population that has to be served by them .

Ticketing is planned to be done both manually and by means of designated personnel over counters and through accreditation machines. EPC Contractor needs to provide adequate number of accreditation machines at all designated floor levels. EPC Contractor should ensure that all equipment related to ticketing in both manual counters and accreditation machines is as per international standards and is fully operational at the time of commissioning of the building.

For the frisking areas, adequate number of door frame metal detectors and baggage scanners are to be provided on designated floor levels at entry to Convention Centre as per the Tender Document. EPC Contractor should provide all the necessary equipment for safeguarding check to ensure that there is no operational deficiency at the time of commissioning of the building.

EPC Contractor has to ensure that adequate number of lockers is provided for in the Cloakrooms at the designated floor levels and that they are of approved make as detailed out in the Technical Specifications of the Tender document.

Provision should be made for drinking water fountains/dispensers and all such related appurtenances in the public lobbies at the locations to be marked out in the detail design and which has to be approved by the PMC/ Employer. The number of dispensers should be as per the standards set out in the National Building Code of India 2016. EPC Contractor must ensure that the drinking water dispenser is of the approved make as detailed out in the Technical Specifications of the Tender document.

#### 1.5.9. Service areas

The components of the service areas are as follows:

- Loading bay for seven long trucks
- Loading bay platform
- Loading bay management offices
- Loading lifts (two goods lifts)
- Service Lifts ( two)
- Staff vertical core
- Staff changing rooms
- Staff toilets
- Staff resting area
- Staff horizontal circulation
- Conference rooms storages per each hall.
- Pre-function room
- Mobile partition closets
- Waitress service dressing area
- Temporary storage
- Workshop room
- Waste room
- Control rooms
- Lighting control room
- Sound control room
- TV station room

The Control rooms, Lighting control room, Sound control room, TV station room, Security control room, Technical rooms ( Electrical, HVAC etc.) are technical in nature and equipment intensive and require specialized input in design and construction. EPC Contractor shall ensure availability of required skillset at the detail design stage and trained manpower during construction/installation. This must be undertaken to ensure that the space provided is adequate and there is no compromise on the functionality of these areas.

EPC Contractor should ensure that adequate number of lockers is provided in Change Rooms and that they are of approved make as detailed out in the Technical Specifications of the Tender document at the time of commissioning of the project.

#### 1.5.10. Entrance Plaza, Spill out Area and Terraces

The Convention Centre has an elaborate Entrance forecourt design which comprises a series of landscaped steps, a ramp and a Plaza at the Second Floor level which are an integral part of the Centre.

The building also consists of a series of spill out areas, Open to sky terraces and covered terraces at various levels. At the Basement 1 level, adjacent to the Conference Room of 1 approx.290 sq.m, lies a large open area as a spill out for potential events in this large Hall.

There are a series of open-to-sky terraces on the second, third, fourth and sixth floor levels of the building respectively. Covered terraces on the second, third, fourth and fifth floor are also part of the building ensemble.

A landscape scheme for all these external areas has been developed. EPC Contractor has to follow the design guidelines specified in the Tender document for the same and has to ensure that the detail design is done keeping into consideration factors including but not limited to, pavement patterns, lighting, terrace waterproofing, drainage systems, and so forth.

#### 1.5.11. Other features of the Convention Centre

The other notable features of the Convention Centre are as under:

- I. Entire Convention Centre has been planned for Universal Access for differently abled persons.
- II. Unique Curtain wall, Glass and GRC Cladding on the exterior façade, with large LED Screens placed at an angle at the top to allow easy visibility from the ground level with large cantilevered structures. It may be noted that an integrated Building Maintenance Unit (Façade Cleaning System) shall be a pre-requisite.
- III. Provide minimum 16 nos. Baggage and X Ray Screening Machines for Entrances. The adequacy shall be determined by detailed Software Simulated Analysis undertaken by the EPC Contractor and to be approved by Employer.
- IV. Provision for separate Drop off for Dignitaries, giving access to the Main Hall and the Grand Ball Room, with at least 5-10 dedicated parking lots.
- V. Provision for the Dignitaries connection with the parking area through the lobby located at ground floor.
- VI. Interiors, furnishings, furniture's, etc. in the Convention Centre as per Design basis report & specific drawings and specifications.
- VII. Hydraulically operated stage of required size as per drawing in the main Auditorium of Convention Centre.

**1.6. Exhibition Halls 1, 2 and associated Grand Foyer. Exhibition Hall 3 (Only Basement), outdoor covered and open Exhibition Area**

The Exhibition complex in the IICC project comprises of five Exhibition Hall buildings and a Grand Foyer that gives access and services to all of them. Two of these Exhibition buildings have Exhibition space at upper floor levels.

The Scope of works for this phase include only the first two exhibition halls and its respective part of the foyer, i.e, Only Exhibition Hall -1 and Exhibition Hall-2 along with the extent of the Grand Foyer in front of these Exhibition Halls are to be constructed in phase-1 and Plant Room and offices in Basement of Exhibition Hall 3

Each exhibition hall is a high performance hall with clear span of 72 mts. These halls have a clear height of 12-15 mts. All halls are designed to allow access of heavy vehicles into the halls for the purpose of loading and unloading of freight and the exhibition halls must be designed to take the load of moving vehicles. The Design and Construction of Grid system and structural stability should cater to multi axle truck loads. The halls are designed to support green roofs to allow for sustainable energy generation through integrated photovoltaic panels. Refer to details provide in sustainability and IGBC sections of the Tender document.

**1.6.1. Exhibition Hall – 1**

The Exhibition Hall contains the exhibition space, which can be sub-divided into independent exhibition areas of 6000 and 8000 sq.m (approximately). A part of Exhibition Hall 1 is programmed to be a multi-purpose hall supporting an automated retractable seating that can seat approximately 5040 people in one volume. It should have a flexible design in order to create many different public assembly configurations within the single facility mechanism each customized to meet changing requirements of event and audience. These could also include different stage configurations. Together with these possible layouts, fire evacuation routes include elevated bridge like elements that connect aisles of the grades and concrete cores.

The following facilities and utilities are provided to support the unique requirements of this Hall:

- Roof structure is to be designed to support future installation of Automatic Vertical Retractable acoustic panels to divide the Exhibition Hall in different configurations for independent Exhibition spaces of approximately 6000sqm and 8000 sq.m area each.
- Exhibition Hall 1 retractable tiers: Multipurpose telescopic lift system for grades, transformable and rotating (360°) seats, capable of fully disappearing within a 4.5m deep pit, leaving a diaphanous space. Ability to achieve any configuration needed, height and orientation and capacity to endure 15 tons (weight of a standard truck) over the space.

The contractor shall ensure complete vetting of the retractable seating parameters, including but not limited to, sight lines, spacing between rows, height of stage, number of seats in a row, number of rows, seating configuration, balcony slope, evacuation routes etc. must be undertaken as per relevant international codes and standards.

Café Bars are located on the upper floors

**1.6.2. Exhibition Hall – 2**

The Exhibition Hall contains the exhibition space, which can be sub-divided into independent exhibition areas of 6000 and 8000 sq.m (approximately).

The following facilities and utilities are provided to support the unique requirement of this hall:

- Air Handling Unit (AHU) is housed at 16m level.
- Solar PV Panels on the roof
- Roof structure is to be designed to support future installation of Automatic Vertical Retractable acoustic panels to divide the Exhibition Hall in different configurations for independent Exhibition spaces of approx. 6000 & 8000 sqm area each.
- Café Bars are located on the upper floors

Both Exhibition Halls have Air Handling Unit (AHU) housed at +16m level and Solar PV Panels on the roof respectively.

#### 1.6.3. Exhibition Hall Services

Each exhibition hall consists of a set of ancillary support services required during the time of exhibition events. These mainly include a Media Room, Organiser's office, V.I.P lounge, and visitor facilities such as Public Toilets, change rooms and staff toilets for the in-house staff. The detailed design for facilities such as V.I.P Lounge, etc. must ensure adherence to all parameters specified in the Tender document including layout, interior finishes and technical specifications. EPC contractor is required to provide for functional spaces and provisions, including but not limited to, adequate electrical points and storage facilities.

Detail design for the functional spaces as operator's office, Media Room shall include design of all required Audio Visual, ICT, lighting, seating and sound equipment, AC control panels and all other associated equipment/ materials as per the detail specification provide in the Tender document. All the finalised equipment shall be approved by PMC/ client before procurement by the contractor. The scope of work for the contractor shall include complete functionality of each of the rooms once completed. Contractor shall not miss on any necessary equipment which at the time of commissioning pose hindrance to its operations.

#### 1.6.4. Exhibition Hall 3 (Basement only)

Service & Plant room at two (02) levels housing HVAC Plant room, Electric Substation for plant room and Exhibition Hall 3 building, Pneumatic solid waste management and compost plant, Sewage Treatment Plant, Water Treatment Plant, underground fire and domestic water tanks, fire pump stations and backup office, ICT Control room etc.

The contractor shall extend the structure above ground level as per structural design requirements for development of Exhibition hall 3 to be executed in Phase-2. Mechanical ventilation ducting for the plant room shall be planned and executed outside Exhibition Hall 3 from plant room.

#### 1.6.5. Grand Foyer

The Grand Foyer is a large open space for circulation that gives access to the exhibition halls, and houses cafes, restaurants, meeting rooms, etc. In the part of the Foyer that is in front of the access to the Exhibition Hall 1, a ceremonial staircase is placed to give access to the Convention Centre.

Each space is connected with the other part of the foyer through a corridor where travellers are located to ease the flow of visitors.

The following facilities and utilities are also placed in the foyer:

- Restaurant & leisure areas: at 16 m level between Exhibition Hall 1 & 2.

These comprise of Cafeterias and Restaurants. The design of these spaces must be vetted as per international standards to arrive at their respective serving capacities. The service routes/ lifts required to bring food for these kitchens should be cross- verified and maintained in the

detailed design to prevent mixing with other circulation flows and establishing a smooth flow. The kitchen must be detailed out considering relevant International space standards. It must also be ensured that the kitchen has adequate light and ventilation and all services and equipment required to make it fully functional.

These spaces are to be adequately designed and detailed by the EPC Contractor including but not limited to provision of electrical points, cabinetry, utilities and wet points. Spatially, it to be ensured that the café spaces are aesthetically pleasing and an inviting space with adequate natural light and ventilation. The interior finishes should be followed by EPC contractor as described in the finishing schedule provided in the Tender document.

- **Offices & Meeting Rooms**

The exhibition centre is equipped with office spaces for a seamless functioning of exhibition Operator management and administration. These have been adequately provided through the centre and are distributed amongst various levels. For the purpose of Phase1, the offices on +16.00 level Between Exhibition Hall 1 and Hall 2 will be adhered to.

Similarly, for the Exhibitors and visitors, support services such as meeting rooms have been designed as a part of the program mix. These may support B2B, B2C meetings during the exhibition event. These are distributed across various levels and would be directly accessible from the exhibition hall. For the purpose of Phase1, the meeting rooms areas will be limited the first floor i.e +6.40 level of Exhibition Hall 1 and Hall 2.

The layout must be maintained / adhered to except, if, in a situation, it is found that due to lack of any unforeseen services coordination at the tender design stage, it is necessary to rearrange the plan.

The detail design of offices and meeting Rooms shall include design of all required Audio Visual, ICT, lighting, seating and sound equipment, AC control panels and all other associated equipment/ materials as per the detail specification provide in the Tender document. All the finalised equipment shall be approved by PMC/ client before procurement by the contractor. The scope of work for the contractor shall include complete functionality of each of the rooms once completed. Contractor shall not miss on any necessary equipment which at the time of commissioning pose hindrance to its operations.

The acoustical measures for the administrative offices have been elaborated in the details provided in the Tender document, which must be duly adhered to.

#### 1.6.6. Foyer Services

The main foyer space is integrated with various services for the visitors, exhibitors as well as the operators. These include but are not limited to Tickets & information offices, cloakroom, manager's office, first aid room, Public Toilets, staff toilets, and changing rooms.

Additionally, functional spaces such as manager's office, ticketing offices, facilities such as cloakroom room, first aid room, changing rooms etc. are to be provisioned with the following including but not limited to adequate electrical points and storage facilities.

Ticketing is planned to be done both manually and by means of designated personnel over counters and through accreditation machines. There are accreditation machines on the Ground Floor level of the foyer. Contractor should ensure that all equipment related to ticketing in both manual counters and accreditation machines is as per international standards and is fully operational at the time of commissioning of the building.

For the safeguarding check and frisking areas, adequate number of door frame metal detectors and baggage scanners are to be provided on Ground Floor level. Contractor should provide all the



necessary equipment for safeguarding check to ensure that there is no operational deficiency at the time of commissioning of the building.

Cloakrooms have been provided at Ground Floor in the main foyer space. In these cloakrooms, there is a provision for lockers. Contractor has to ensure that adequate lockers are provided for and that they are of approved make as detailed out in the Technical Specifications of the attached Tender document.

Provision should be made for drinking water fountains/dispensers and all such related appurtenances in the public lobbies at the locations to be marked out in the detail design and which has to be approved by the PMC. The number of dispensers should be as per the standards set out in the National Building Code of India 2016. Contractor must ensure that the drinking water dispenser is of the approved make/standard as detailed out in the Technical Specifications.

#### **1.6.7. Outdoor Covered Areas**

These spaces are meant to act as transition spaces between the foyer and open exhibition areas. The prime reason for these is to provide extended space for outdoor exhibitions to take place.

The EPC contractor is required to coordinate the details of such spaces with landscape design while designing and detailing these spaces. The details should be able to take care of all outdoor elements that may impact this space such as water, dust and heat. The EPC contractor must also ensure the seating provided in the outdoor areas are adequate in number to accommodate high flow of visitors and these should adhere to Indian / international standards.

Additionally, EPC contractor to cross-verify during B.U.A and F.S.I calculations as per UBBL 2016, or Delhi Building bye-laws that these have been correctly incorporated in the right calculations.

#### **1.6.8. Outdoor Exhibition Areas**

These are spaces demarcated for outdoor exhibition displays. These are to be designed to take heavy duty weights for all kind of heavy Exhibits. The EPC contractor has to detail these spaces adequately to allow electrical connections and provisions for lighting and audio visual equipment. The EPC contractor must also ensure the seating provided in the outdoor areas are adequate in number to accommodate high flow of visitors and these should adhere to Indian / international standards.

### **1.7. Landscape**

The theme of the landscape element for IICC Dwarka is to be of an aesthetically pleasing, large urban space with strategic interventions placed along the open plazas and within external exhibition spaces that provide shade, public amenity and ease of access and egress for all users. The open space should have a vitality that encourages users and is to be designed so that it complements the dual roles of the venue, as a destination for world class events and functioning as a large urban hub with commercial and residential premises. The site should address the changing social and spatial implications of Public Open Space with respect to the attitudes, lifestyles and sustainability issues. The Public Open Space should be comfortable with expressions of diversity both personal and cultural. It should be a comfortable place to transit through or sit and contemplate, providing multiple opportunities for a diverse range of experiences and importantly the distinction between the surrounding built forms. It should also be a little blurred to reduce the demarcation of one space (public) from the corporate. The design language is similar to many found worldwide wherein it tries to merge the pedestrian oriented plazas with the vehicle centric, internal streets and lanes.

#### **1.7.1. Softscape:**

The landscape response should be designed to consider the location and inherent climatic conditions of hot and wet summers, and cool winters in the NCR. The landscape palette proposed for the site should primarily be of well-established and naturalised species. Size and scale of the trees should be commensurate with the typology of the project, large sized and well established trees and shrubs are important at project completion. Scale is important to provide the needed identity of the brand and amenity for the occupants. Proposed planting locations should consider the depth of soil required to successfully grow the species selected. Aligned with this, where planting is proposed above the structural elements of the project, the available space to underground utilities and structures is to be considered and existing reference material such as the IGBC utilised to confirm suitable depth and width, exists for the proposed planting. Tree anchors are to be used for all trees above 3.0mts height at time of installation. It is recommended that the Contractor initiate a site nursery to 'grow on' and harden plant stock to the prevailing conditions. This can also provide replacement planting and seasonal variety for high profile areas within the project.

All planting is to be irrigated with a computer controlled, environment sensitive irrigation system, specifically designed for the proposed planting. Water source identification and drawdown capacity are to be confirmed and approved by the Employer prior to implementation. The Contractor is to identify soil types and irrigation demand associated with soil type and if ameliorants are to be installed to improve the water holding capacity (WHC). Wireless compatible, inline water supply testing and quality measuring devices are to be included at the design stage and installed prior to construction completion. Surface sprays are suitable only for larger lawn areas and to be avoided for all garden beds. Moisture sensors are to be integrated in to the irrigation delivery system along with pressure checking devices to assist in identifying potential leakage in the system hardware.

It is recommended that the use of mulches be taken up in the open garden beds to reduce soil moisture evaporation and reduce maintenance from wind-blown weeds.

Raised planters are to be included in the overall irrigation design. The planter should be of a type that can store the equivalent of 2 days water demand (defined by the planting) in the base of the planter.

Drainage of these raised planters (either container or earth berm) is to be via a below ground suitable discharge point, without surface water impeding pedestrian access or degrading the visual aesthetic. Where surface drains are proposed they should be of a stainless steel finish and of a design that does not hinder/ impede pedestrian access.

#### *1.7.2. Hardscape:*

Pavement materials should be of a high quality and low maintenance, able to withstand the vagaries of the weather and usage by large numbers of people. The pavement material should have enough variation in the product, that different areas can be identified by the surface or texture. For example the main plaza space vs the bisecting laneways. In the same vein, structural elements such as the pergolas, water features, signage and lighting should have a strategic hierarchy that clearly articulates the spatial presence to the occupant..

For wayfinding and signage provisions, the Contractor will be required to engage a specialist Consultant to prepare a comprehensive site wide analysis of the needs and methodology to be employed along with concept sketches for review and Employer approval prior to commencement of works.

Specialist elements such as light poles and fittings, drinking water fountains, bollards, pavement markers and other required Public Open Space fixtures are to be submitted for approval by the Employer or its representative for suitability and aesthetics prior to procurement.

To maintain the proposed aesthetics, a maintenance strategy for all timber elements is to be provided prior to product approval.

#### **1.7.3. Water features:**

There are a number of formal water features proposed in the landscape scheme. For these to be successful, global design practises and implementation are paramount standards to meet core demands for longevity and sustainability of these elements. Construction of the waterbodies and the supplemental pump rooms/ fittings with 'world's best' approaches are critical to the ongoing success. Maintaining the water quality and health are without doubt, key areas that the Contractor has to provide detailed analysis and planning for review prior to construction. For the larger water features, wind sensing devices are recommended for system installation as these will stop operations at times of high wind, reducing spray drift and water loss.

Pavement types to be used in areas surrounding water features have to consider the probable spray drift and the impact on the safety of the pedestrian when traversing these locations. A suitable non slip finish should be installed to reduce the potential for slip falls. Flush through pavement, in and around water features is to be installed with an Employer approved proprietary product that supports the pavement and reduces the long term maintenance requirements.

Informal water features have been proposed in the peripheral planting to the green buffer. Design solutions for these areas should incorporate aquatic planting to the edges which improve water quality and reduce the potential for stagnant water and harmful bacterial growth. If the water body is large enough (i.e. greater than 100m<sup>2</sup>) alternate options could include installation of solar powered pumps to assist in aerating the water.

#### **1.7.4. Lighting:**

The requirement is for a safe Public Open Space and so a visitor experience to this vibrant precinct is enhanced by innovative lighting solutions which offer pedestrian safety and amenity. Places that are safe by day will remain safe, comfortable and engaging after dark. Energy will be used responsibly and sky glow and glare will be minimised to reduce the impact on the visitor, wildlife and aircraft operations. Assessment of the likely visitor numbers & timings, street hierarchy, can be used to moderate the external lighting to times of high occupancy. Lighting can be used sparingly to highlight special architectural elements or buildings throughout the project as well as recognise key directional fixtures.

Within the central activity precinct and peripheral retail areas, illumination levels should be sufficient to produce the following effects:

- a. Ensure the edges of streets and other public spaces are well lit
- b. Reveal changes in level and other potential hazards
- c. Assist way-finding
- d. Allow a person's features to be recognised at a distance of 10 to 15 m.

#### **1.8. Basement for car Parking**

- a. The Project proposes an elaborate basement for parking. This is planned in 3 parking levels under the Foyer and in 4 levels adjacent to the Convention Centre. Access to the Basement is through ramps provided for entry and exit at various locations as shown on the site plan and other drawings.
- b. The Basement parking shall be planned with parking bay/slots demarcation using paint marking, signage, graphics, and column guards etc. to give a pleasing appeal to the basement.

- All driveways, parking slots, etc. shall be painted along with digital signage, marked for direction, access, etc. in raised paint finish.
- c. All Fire Fighting, Ventilation, Lighting, Drainage, etc. shall be planned as per NBC-2016 Norms.
  - d. Basement parking shall be organized in color coded parking clusters or areas.
  - e. Driver lounge with seating arrangement and washrooms at all basement levels.
  - f. An elaborate parking management system is to be provided for the project with the following features:
    - After safeguarding checks as per the safeguarding specifications, automatic vehicle token vending machine shall be installed interfaced with access control boom barriers.
    - A LED information screen showing the total number and available number of car parking, color cluster wise, at the entry points of the basement car parking as well as at the entry points/adjacent to the color cluster.
    - Each car parking slot shall have an availability sensor which shall turn red/green based on occupied/available status of the particular slot.
    - Manned Parking Fee collection counters:- At the exit points, with computerized token readers to determine payable fare as per time spent in the parking.

### **1.9. Miscellaneous Buildings**

#### **1.9.1. Two (02) Grid Sub-Stations**

#### **1.9.2. DG Room building and cooling tower**

#### **1.9.3. Central Control & Command Centre (CCC) for**

- Command and Operations Control Centre
- Engineering Control and Command Centre (at Exhibition hall 3 Plant Room).

#### **1.9.4. Disaster Management Centre Building with Fire Station and Medical Centre.**

It may be noted that while detailed loads, sizes of equipment for various MEP disciplines have been indicated in the Scope of Works/Design Basis Report/drawings and they are the minimum capacities required for the contract, the EPC Contractor shall undertake a detailed MEP engineering design and get the same approved by the Employer and designated 3rd Party as the case may be. The area of the disaster management centre required will be approx. 660 sq m and the same shall be planned above the fire station building.

1.10 It would be the responsibility of the EPC Contractor to ensure that the minimum capacity and sizes specified for such facilities, all design criteria and performance parameters are achieved in the design proposed by them.

It may be noted that the EPC Contractors shall need to coordinate with various Municipal & enforcing agencies like NHAI, PWD, DJB, BSES, IGL, SDMC, DDA, DFS, DPCC, AAI, MCD, Chief Conservator of Forests, Traffic Police, Tariff advisory, Explosives Department, MoEFCC, DMRC, etc. to ensure timely and lawful working and completion of the Project. Further it must be noted that Quality Assurance is an integral requirement of the project and a detailed Quality Assurance program shall be submitted for approval by the Employer. The EPC Contractor shall be agreeable at all times for any inspection of their Quality Assurance program and its implementation by PMC/any third agency as appointed by DMICDC.

### 1.10. Electrical Works

The electrical works shall include following minimum requirements;

- a. Tentative electrical loads for phase-1 are provided in the Design Basis Report .These have to be verified by EPC Contractor before proceeding with design and procurement.
- b. Providing/Construction/installation of Main Electrical Substations (2 nos.) , GIS, double bus-bar, 66 / 11 kV, with 2 x 50 MVA oil type power transformers. The grid substation shall have in addition transformers for supplying power to control switch gear and substation auxiliary loads
- c. 18 nos. 11KV, 2000 KVA diesel generator sets for phase-I.
- d. HT cables (11 kV) from the switchgears (placed in Diesel Generator Building) to each substation 11 / 0.415 kV for phase-I buildings, AC Chillers and other services, if any. The routing of these cables shall be through the Services Gallery.
- e. 11/0.415 kV Electrical substations shall be provided for the following buildings/services for phase-I:
- f. Transformers for various areas to be provided

1	Exhibition Hall 1	2X2500 kVA dry type transformers
2	Exhibition Hall 2	2X2500 kVA dry type transformers
3	Convention Centre	3X2500 kVA dry type transformers
4	Foyer – 1 & 2	2X1600 kVA dry type transformers
5	Parking underFoyer1&2	2X1000 kVA dry type transformers
6	Parking under Convention Centre	2X1000 kVA dry type transformers
7	AC Plant room, STP, Fire Water storage, Water Treatment Plant, & Storage, Solid waste collection & disposal etc., Services and other areas under Exhibition Hall-3	4X2500kVA dry type transformers
8	Substation for common services/ buildings/spaces Fire station, service gallery, Landscape lighting, external lighting, fountains/irrigation pumps, sump pumps, etc.	Suitable capacity dry type transformers
9	Substation for diesel generator building	3 X 400 kVA dry type transformers.

- g. For all buildings in Phase-I, two 11KV incoming feeders (ring format) shall be provided for each building and terminated at two VCBs.
- h. Providing & installation of 11KV Feeders including cables and 11KV RMU for termination of 11KV feeders for phase-I MUD buildings.
- i. 11KV network from centralized common backup power DG Sets shall be integrated at 11KV panels at the centralized facility for all buildings, except the MUD buildings in Phase-I.

- j. For MUD buildings, two 11KV incoming feeders (ring format) shall be provided for each building and terminated at two VCBs, which will be connected to the HT panels of substation in each building provided by the occupants. Outgoings from the substation HT Panels, shall feed min. two transformers Loading – 80%, off load TC. DG Backup power will be provided by the occupants of buildings.
- k. All internal lighting fixtures and lighting Control Systems.
- l. External and landscape lighting cables, feeder pillars, lighting fixtures, poles and lighting control systems. Wiring work to external/landscape and public area architectural/special lighting and dimming systems to be provided for energy efficiency.
- m. All internal & external lighting fixtures shall be LED and energy efficient.
- n. Solar PV power generating Systems and their interface with electrical system.
- o. Integrated Building Management System and SCADA for monitoring, controls, efficient and optimum operation and maintenance of all buildings, systems, plants, power distribution system, 66KV Substation, Central DG Facility, load management, all HT & LT Panels, other equipment, etc. in the entire complex.
- p. Central Grid earthing systems for connection to all electrical equipment, components, systems.
- q. Complete LT distribution system including main LT switchboard, automatic power factor correction devices, enhanced immunity devices, ELCB/RCCB, submain-boards and distribution boards, UPS and associated distribution main and sub-main cabling and associated accessories.
- r. Complete lighting and power installation including all final circuiting work and associated accessories.
- s. Normal and emergency lighting supply installation and associated accessories.
- t. Telephone/TV cabling system and associated accessories.
- u. Internal cable system and outlets for all LV system and associate works.
- v. Wiring and all accessories for complete Security systems.
- w. Miscellaneous works like providing and fixing of rubber mats, fire buckets, first aid box, fire extinguishers, etc.
- x. All associated interfacing power supply works to other mechanical and HVAC installations.
- y. Voltage drop as per IER, transformer losses as per Super ECBC, power factor and other parameters shall be as per ASHRAE 90, Super ECBC, NBC, and IGBC requirement.
- z. Lighting density shall be furnished through energy simulation carried out for IGBC Platinum rating for all the Buildings.
- aa. Power factor to be better than 0.95, Thyristor switching, with harmonic filters.
- bb. All associated interfacing works with other MEP installations.
- cc. Other works as shown on the Drawings or described elsewhere in the Contract documents.
- dd. All design, drawings, detailing, materials & equipment along with technical submittals shall be approved by Employer before procurement by the EPC Contractor.
- ee. Any other work/activity which is not listed above however necessary for completeness of electrical system.

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- ff. The installation shall comply in all respects with the requirements of Indian Electricity Act 1910, Indian Electricity Rules (IER) 1956 and other related Laws and Regulations (for F.F. etc.) as amended up to date, there under and special requirements, if any, of the State Electricity Boards etc.
- gg. The EPC Contractor shall be liable to furnish the list of authorized licensed persons/ employed/ deputed to carry out the works/ perform the assigned duties to fulfill the requirement of Rule No.3 of IER 1956 as amended up to date.

1.10.1. Lifts, escalators, travellators and ramp systems

The EPC contractor shall be required to submit traffic analysis for verification based on the parameters specified/as required.

<b>LIFT, ESCALATOR, TRAVELLATOR, Ramp system</b> (Requirements to be verified, traffic analysis to be carried out by EPC Contractor before procurement.)			
<b>SI.01</b>	RAMPS	Foyer-1	2 mechanical ramps connecting Foyer 1 and Convention Centre, from level 0.00 to level 4.65. inclination 10 degrees, velocity = 0.65 m/s. Dimensions: 32 m long 1.2 m width. 2 interior ramps.
<b>SI.02</b>	TRAVELATORS	Foyer-2	<b>SI.02.01</b> TRAVELATORS. inclination 0 degrees, velocity = 0.65 m/s. dimensions = 72 meters long. Width of the travelling belt = 1.20 m
<b>SI.03</b>	ESCALATORS External finish anti scratch stainless steel 304	Foyer-1 / Foyer-2	<b>SI.03.01</b> INTERIOR ESCALATORS: 30 degrees inclination and velocity : 0.5 m/s  4 escalators in total from level 0.00 to level 9.60 (2 escalators FO1) 2 escalators (FO2) 2 escalators (FO1) from level 0.00 to level 4.65 establishing connection with CC.
		Convention Center	<b>SI.03.02</b> INTERIOR ESCALATORS in CC. 35 degrees inclination and a velocity : 0,5 m/ s  1 escalator coming from level -4.65 (B1) to level 9.30 (P2) 4 escalators coming from level -4.65 (B1) to level 4.65 (P1) 4 escalators coming from level 4.65 (P1) to level 9.30 (P2) 4 escalators coming from level 9.30 (P2) to level 13.95 (P3) 4 escalators coming from level 13.95 (P3) to level 18.60 (P4) 4 escalators coming from level 18.60 (P4) to level 23.25 (P5) 3 escalators coming from level 23.25 (P5) to level 27.90 (P6)
		Convention Center	<b>SI.03.03</b> EXTERIOR ESCALATORS in CC : 30 degrees inclination and velocity : 0.5 m/s  2 escalators coming from level -4.65 (B1) to level 0.00 (P0) 2 escalators coming from level 4.65 (P1) to level 9.30 (P2) 2 escalators coming from level 9.30 (P2) to level 13.95 (P3)
<b>SI.04</b>	LIFTS Doors / Drive VVF  Car Finishes Internal anti scratch Stainless Steel  Car Doors / Landing Doors	Exhibition-1	SI.04.01 LIFTS EH1. All lifts will have a capacity of 21 passengers.  SI.04.01a INTERIOR LIFTS car size as per IS (2.4 m high). Doors: 1.1 m wide and 2.20 m high. Shaft size 2.7 m x 2 m. Speed : 1.5 m/s 2 lifts coming from level 0 to level 4.80 (cafe bar) (2 stops)  2 lifts coming from level -10.90 (basement -3) to level 4.80 (offices). (5 stops) 1 lifts coming from level -10.90 to level 9.60 (restaurant) (4 stops) 1 lift coming from level 0.00 to level 6.40 (grades) 2 lifts coming from level -10.90 to level 16.00 (offices) (5



<b>LIFT, ESCALATOR, TRAVELLATOR, Ramp system</b> (Requirements to be verified, traffic analysis to be carried out by EPC Contractor before procurement.)			
	Framed anti scratch Stainless Steel with 8mm toughened glass		stops)
	Flooring – Granite as approved		
	Passenger Lifts Interior anti scratch Stainless Steel Car / Lift Landing Doors Frame anti scratch Stainless Steel with 8mm toughened glass		SI.04.01b EXTERIOR LIFTS. car size 2.05 x 1.7 m (2.4 m high). Doors: 1.1 m wide and 2.20 m high. Shaft size 2.7 m x 2 m. velocity : 1 m/s. Exterior lifts must be protected against rain and sun radiation. 2 lifts coming from level 0.00 to level 4.65 (connection with CC) (2 stops)
	Flooring : Approved pattern Indian Marble	Exhibition-2	SI.04.02 INTERIOR LIFTS EH2. All lifts will have a capacity of 21 passengers. car size as per IS (2.4 m high). Doors: 1.1 m wide and 2.20 m high. Shaft size 2.7 m x 2 m. Speed : 1.5 m/s 4 lifts coming from level 0.00 to level 4.80 (2 for meeting rooms / 2 for cafe bar) 4 lifts coming from level -10.90 to level 9.60 (restaurant) (5 stops) 6 lifts coming from level -10.90 to level 16.00 (offices) (5 stops)
	False ceiling decorative	Convention Center	SI.04.03 INTERIOR LIFTS CC : car size as per IS ( 2.2 m height). doors: 1m width 2.1 m height. Shaft size 2.2 x 1.65m. Pit depth as per IS machine roomless in all elevators which load capacity will be <2500 kg. Speed 2.5 m/s. 13 passengers capacity = 4 public lifts from level -4.65 (B1) to level 23.25 (P5) 2 public lifts from level 23.25 (P5) to level 27.90 (P6) 2 public auditorium lifts from level -4.65 (B1) to level 4.65 (P1) 2 public auditorium lifts from level -4.65 (B1) to level 9.30 (P2) 2 public parking lifts from level -7.40 (B2) to level 0.00 (P0) 1 artist lift from level -7.40 (B2) to 9.30 (P2) 1 staff lift from level 27.90 (P6) to level 31.88 (P7) VIP / VVIP Lifts – 20 Passengers 2.5m/s Drive / Door Drive VVVF
	Drive / Door Drive VVVF	Both lifts shall have facilities for interior access control system thru Programma ble smart Card – Mechanical lock / as required for VVIP Lifts.	1 VIP lift from level -4.65 (B1) to level + 31.88 (P7) ( both sides entrance at level -4.65) but 20 car and shaft sizes as per IS. 1 VIP lift from level -7.40 (B2) to level 0.00 (P0)
	VIP / VVIP Lifts - Interior embossed lacquered brass as per approval		
	Lift Landing Doors Frame lacquered brass with 8mm toughened glass		
	Flooring : Approved CNC cut Floral pattern with Indian marbles		
	False ceiling - decorative		

<b>LIFT, ESCALATOR, TRAVELLATOR, Ramp system</b>			
<b>(Requirements to be verified, traffic analysis to be carried out by EPC Contractor before procurement.)</b>			
<b>SI.05</b>	SERVICE LIFTS	Exhibition-1	<p><b>SI.05.01</b> SERVICE LIFTS EH1: car size 2.1 x 3 m ( 3 m height). doors: 1.3 m width 2.6 m height. Shaft size 3.4 x, 3.5 m. Pit depth 1.9m. over run 4.8m. velocity: 0.5m/s. 2000 kg load capacity.</p> <p><b>SI.05.01a</b> 2 service lifts from level 0.00 to level 16.00 (kitchen)</p> <p>2 service lifts from level 9.60 to level 16.00.</p> <p><b>SI.05.01b</b> 1 service lift from level 0.00 to level 16.00.</p>
		Exhibition-2	<p><b>SI.05.02</b> SERVICE LIFTS EH2: car size 2.1 x 3 m (3 m height). doors: 1.3 m width 2.6 m height. Shaft size 3.4 x, 3.5 m. Pit depth 1.9m. over run 4.8m. velocity: 0.5m/s. 2000 kg load capacity</p> <p><b>SI.05.02a</b> 3 service lifts from level 0.00 to level 16.00 (kitchen)</p> <p><b>SI.05.02b</b> 2 service lifts from level 9.60 to level 16.00</p> <p><b>SI.05.02c</b> 1 service lift from level 4.80 to level 9.60</p>
		Convention Center	<p><b>SI.05.03</b> SERVICE LIFTS CC :</p> <p><b>SI.05.03a</b>_2 service lifts <i>right</i> from level -4.65 (B1) to level 31.88 (P7) : car size 1.5x 2.7 m ( 3 m height). doors: 1.3 m width 2.6 m height. Shaft size 3.4 x, 3.5 m. Pit depth 1.9m. over run 4.8m. velocity: 0.5m/s. 2000 kg load capacity</p> <p><b>SI.05.03b</b>_3 service lifts from level <i>left</i> -7.40 (B2) to level 31.88 (P7) : car size 2.1 x 3 m ( 3 m height). doors: 1.3 m width 2.6 m height. Shaft size 3.4 x, 3.5 m. Pit depth 1.9m. over run 4.8m. velocity: 0.5m/s. 2000kg load capacity</p>
<b>SI.06</b>	MOBILE PLATFORMS Hydraulic	Convention Center	MOBILE PLATFORMS coming from level -7.40 (B2) to level -4.65 (B1) presenting one stop at -6.40 level. They must be prepare for lifting big loads: dimension platform 1 = 7.70m and 3.25m dimension platform 2 = 8.55m and 3.53m
		Stage Convention Center	Dimensions and travel as per drawings capacity 4 tons

### **1.11. ICT Systems**

The entire campus is proposed to be equipped with State of the Art ICT network. The EPC Contractor shall ensure that the design for complete ICT network provides high speed data, voice and surveillance along with integration of complete BMS, SCADA and Audio visual facilities. The Scope for ICT includes:

- a. CCTV, ACS, IAS Control Systems
- b. IT and Data Networking Infra Systems: Data Centre, Active & Passive components, Wi-Fi, and IPABX Systems.
- c. Audio Visual Systems, Digital Signage, BGM Systems and OB Van Connectivity
- d. Security Systems including appropriate metal detection equipment, X-ray baggage check machines, complete with people counting Management system and data logging facility.
- e. Augmented Reality / Virtual reality Solution
- f. Command and Control centres

#### **1.11.1. CCTV, ACS, IAS Control System**

- I. Entire complex shall be covered under CCTV surveillance, ACS & IAS Control systems. Complete Perimeter Security of campus. All cameras should be POE enabled with 3 simultaneous video streams, minimum 60 days recording to be captured.
- II. CCTV monitoring for respective building should happen in same building. Monitoring of perimeter area shall happen from multiple locations. Administration and monitoring should be available at Secondary Control room & Operational Control Room as well as Main control room.
- III. In CCTV Security – Video Analytic software with capability to automatically provide proactive alerts needs to be considered.  
Some of the features can be –  
Perimeter / Intruder Detection, Left Baggage, Trip Wire, Asset Protection, Loitering, Parking Violation, Object recognition & Categorization, Side & Perimeter Protection, Object tracking & Counting, Face recognition and tracking, Camera Tampering, Crowd Gathering etc.
- IV. Backup of the above recording shall be made available in the Main data centre and Secondary Data Centre followed by administration and monitoring should be available at Secondary Control room & Operational Control Room as well as Main control room.
- V. Access Control & Alarm Monitoring System
- VI. Intrusion Alarm System integration, Critical Alerts from ACS & IAS should produce report along with CCTV footage.
- VII. Visitor Management System Integration
- VIII. Video Badging
- IX. DVR / NVR Integration.
- X. Interactive Guard Tour
- XI. Asset Management System.
- XII. Biometric Finger Print Enrolment
- XIII. Automatic Number Plate Recognition
- XIV.

All physical security related packages namely – CCTV Surveillance, Intrusion Alarm System, Access Control System, Time and Attendance System, Guard tour, Visitor management system etc shall have on-premises servers and no web based system to be provided. Administration, monitoring, control should not be web based and/or cloud based. No data base should be available on the web / cloud. Web connectivity to all of the above can be provided only for viewing rights through authenticated WAN routes.

ACS – Access Control System shall be operable manually as well as through RFID cards. The system shall be integrated with CCTV system, BMS system and Intrusion alarm system. Details specifications are explained in the specification document.

1.11.2. IT and Data Networking Infra System include Data Centre, Active, Passive, Wi-Fi, and IPABX System

A multiservice network is a backbone network that supports traffic of different systems, no matter what the system is, provided that they are IP protocol based. MMN will provide connectivity to all ICT and security systems of the Dwarka Exhibition & Convention Centre in a unified way. It will also be the entry point for other external communications, for which the necessary controls will be established.

The systems that will use the MMN as means of transmission will be at least the following:

- Closed-Circuit Television (CCTV) System ,
- Access Control System ,
- Telephony System ,
- Building Management System (BMS) ,
- Public Address System (PAS) ,
- SCADA / FAS ,
- Audio Video / Digital signage / BGM ,
- Parking Management system ,
- TV and Broadcasting.

**i. Basic requirements**

The network will share the physical means of transport for the different systems (voice, data, access control, etc.). The physical means of transport will always be optical fibre and UTP copper cabling.

Optical fibre cabling to be installed should be able to withstand high densities of data traffics. Although the network will be shared by the different systems, some systems might need to use optical fibre cables to install their own transport system. Thus, 30% of the installed optical fibre cables will be left unused (dark fibres) in order to install future systems. The capacity of the network will be enough to provide service to all the systems that use it. The network will be protected and secure. That is, some equipment will be protected while other will have a degree of opening. This will be done by using firewalls in the connections to the outside of the premises and VLANs in the inside.

**ii. Network Architecture**

In order to meet the requirements that have been previously established, the network will have the following features:

- It will implement the hierarchical internetworking model of three layers: core, distribution and access. The access layer will consist of access switches distributed throughout the buildings. Access switches will be preferably stacked. The distribution layer will consist of distribution switches. They will be installed in the main buildings of the Centre. In order to provide redundancy to the network in the main buildings, two distribution switches will be installed in each of them. If possible, they will be installed in separate rooms.

- The core layer will consist of core switches. Two core switches will be used in order to avoid a single point of failure to the entire network of the Exhibition & Convention Centre. If possible, they will be installed in separate Data Centres. These core switches will also be redundant.
- Singlemode optical fibre cabling will be used for the connection between core and the distribution layers. OS2 type will be selected.
- Multimode optical fibre cabling will be used for the connection between the distribution and the access layers. OM4 type will be selected.
- Both backbone links will be made redundant, using whenever possible different physical paths.
- UTP cabling shall be used for the connection of the end-points with the access switches. Cat6A type will be selected. The access interfaces will be RJ-45.
- In case of special high speed data connections needs for special events, Multimode optical Fibre OM4 type shall be used to connect these connection points to the nearest ICT Technical Room.

### **iii. Topology**

ICT Network comprises the Core Switches, located at 2 Data Centers:

- Main Data Centre (MDC): located at Convention Centre
- Backup Data Centre (BDC): located at Exhibition Hall 2

These Core Switches shall connect to the following premises:

- Distribution Switches (DS): located at Primary ICT Technical Rooms of the main buildings of the District
- Communication Operators Rooms (CORs):
- Main Security Control Centre: located at Convention Centre Core Switches shall be redundant at each Data Centre.
- The Main ICT network should have redundant optical fibre rings to ensure 100% redundancy in design. Detailed Optic fiber rings for MMN is explained in ICT Engineering Document.

### **iv. DATA CENTRE –**

Tier 2 standard data centre for primary & secondary to be considered. EPC Contractor shall be responsible for Supply, Installation Testing, Commissioning, Training of all the below mentioned (but not limited to - ) Data Centre Non-IT Physical components, IT components and civil works along with all accessories, power cords, etc. Including integration & co-ordination

Design of the data center should be with high "Energy efficiency", "sustainability"& with "Green IT" concept. The power consumption during running operations needs to be optimized. The data center must make the required services available with high performance, high availability with modular scalable Infrastructure for future expansion. EPC Contractor shall be responsible for Supply, Installation Testing, Commissioning, Training of all components in Data Centre such as Non-IT Physical components, IT components and civil works along with all accessories, power cords, etc. Including integration & co-ordination.

### **v. Wi-Fi –**

- WiFi access should be available indoor as well as outdoor.
- WiFi access points shall be controlled by primary as well as secondary controllers
- User based policy shall be defined for use of WiFi.

### **vi. IP EPABX SYSTEM -**

- The EPABX System shall work on Master – Slave Architecture. The master EPABX system shall have Primary located in primary data centre and secondary for backup in secondary data centre. The number of ports in the EPABX system should be able to cater to both Phase-1 & Phase-2 requirement plus 50% redundant.
- The slave EPABX system shall be located in each of the buildings namely Convention centre, Exhibition halls etc.
- The EPABX System should have sufficient firmware, licenses etc for IP phone, Analog phones, SIP phones, Dect Phones etc. The phones shall be of 4 types namely – High End IP Phone, Medium End IP Phone, Low End IP Phone & analog phones.

*1.11.3. Audio Visuals, Digital Signage, BGM, and PA system*

Scope of work for the EPC Contractor includes design, supply and installation of complete Audio Visual System for interiors of Buildings as well as for exteriors along with Digital Signages, BGM and PA systems design.

*i. Audio Visuals*

- Auditorium - Main Hall – 4000+2000 Pax
  - LED Screen size 20mX 4.5m for the main stage of the convention centre.
  - Digital Sound Reinforcement, BGM & PA, Language Interpretation:
  - Auditorium A, Auditorium B and Combination of Both Auditoriums in combined mode
  - Digital Podium for Presentation & Speech
  - Stage Lighting Systems & Dimming Controls
- Exhibition Hall 1 Auditorium
  - Projection, Display and Switching System
  - Digital Sound Reinforcement, BGM & PA, Language Interpretation:
  - Digital Podium for Presentation & Speech
  - Stage Lighting Systems & Dimming Controls
- All Convention Rooms in the Convention Centre
  - Projection, Display and Switching System:
  - Digital Sound Reinforcement, BGM & PA, Language Interpretation
  - Digital Podium for Presentation & Speech
- Grand Ball Room– (1 Nos.)
  - Projection, Display and Switching System:
  - Digital Sound Reinforcement, BGM & PA, Language Interpretation:
  - Digital Podium for Presentation & Speech

*ii. Digital Signage system*

- Key features for digital signage are:
  - Display up-to-the-minute meeting room Schedules
  - Eye-catching displays enhance branding
  - Make bookings and start and end meetings right outside of the meeting room
  - Manage no shows
  - Prevent booking mistakes
  - Way Finding & Guidance.
  - The Digital signage system shall have input sources connection from Local PTR / Control Room as well as main control room.
  - The Digital signage system shall be connected over AV over IP Topology and use the MMN network.
- Digital Signage Placement

The Digital Signage screens are to be installed in the following selected areas including but not limiting to Lobbies, Elevator banks, Exhibit Halls , Restaurants & Cafes , Outside meeting rooms & exhibit halls , Facility retail establishment etc. .

- Features of the MMN for the Digital Signage System

As mentioned above, the proposed Digital Signage System will not require a dedicated network. The system will use the Main Multiservice Network of the complex. The MMN will be configured so that it will be able to manage the traffic of the access control system without degrading its service, even if the network is congested with traffic of other systems. A differentiated VLAN will be defined in the network electronics of Layer 2 for the access control system. Each telecommunication room will have its own Digital Signage VLAN, which contains the screens connected to this room. As the structured cabling system through which the Digital Signage system traffic is transported is manufacturer independent, any Display on the market supporting IP technology could be used in the Digital Signage system.

*iii. PA & BGM*

- PA & BGM systems should be available for all location within the buildings and outside the buildings within public areas.
- PA & BGM systems shall be integrated with BMS system for alarm triggers.
- Fire Alarm System & PA System shall supersede BGM systems in case of emergency.
- The PA & BGM system shall have input sources connection from Local PTR / Control Room as well as main control room.
- The PA & BGM system shall be connected over AV over IP and / or Dante Topology and use the MMN network.

*iv. OB VAN Connectivity and Broadcasting System*

- The design criteria of the TV related installations available in the complex is to connect all the Exhibition Halls area, Grand Ball Room& the Convention Centre to the TV broad cast center for the purpose of OB VAN connectivity and TV broadcasting from a single location.

1.11.4. Security Systems including appropriate metal detection equipment, X-ray baggage check machines

- Physical security shall be provided using x-ray baggage scanning & recording.
- metal detection scanners shall be provided for physical frisking.
- Metal detection and risk detection shall be made available for all vehicle entry as well as building entry points.
- Security & Automatic Parking Management & Guidance System
- Parking Management system Integration
- Visitor Management System Integration
- Asset Management System
- Biometric Finger Print Enrolment
- People counting and Management System

1.11.5. Augmented Reality / Virtual reality Solution

- Media Wall
- Magic Mirror with four skeleton mapping
- Digital Signage with gesture based solution
- Lobby Projection Mapping

- AR based Solution for five Earth Elements
- Interactive History Wall

### **1.12. Plumbing Services**

The Scope shall be providing Plumbing services for the entire complex spread over 89.72 Ha and internal mechanical services for the Convention Centre, Exhibition Halls, Grand Foyer and other miscellaneous buildings. This shall include, but NOT be limited to the following;

#### **1.12.1. Water supply system**

Providing & installation of Two (02) piping system (flushing & domestic water supply) including complete pumping and storage system.

- a. Minimum 250 mm dia D.I. pipes for domestic and treated water, minimum 150mm dia HDPE pipes for horticulture with control and isolation valves.
- b. Variable Frequency Drive hydro pneumatic pumps to maintain minimum 15 m residual pressure at highest point. Separate set of pumps for day and night water distribution for domestic and treated water both.
- c. Variable Frequency Drive hydro pneumatic pumps supply of soft water to cooling tower.
- d. The water supply by Delhi Jal Board has TDS of 150. No water treatment plant is proposed except for water to be used for Air-conditioning.
- e. The storage capacity of water tank shall be as per DBR and Technical specifications.

#### **1.12.2. Sewer & Storm Water line Network**

- a. Complete underground pipe network shall be double coil wall HDPE piping, HDPE pre cast manholes, double seal C.I. heavy duty manholes covers, SFRC perforated catch basins. RCC break tanks of adequate capacity complete with set of submersible pumps to discharge water to city storm water drain above HFL.

#### **1.12.3. Sewer Treatment Plant (STP)**

- a. All the civil work for the STP plant shall be executed for 10MLD capacity and electro mechanical works shall be for 4 MLD (Two modules of 2 MLDs).
- b. MBR Technology with UV treatment and softening plant for supply of water to cooling towers.

#### **1.12.4. Irrigation Network**

- a. Trunk irrigation line of 150 mm size including variable frequency drive hydro pneumatic pumping sets shall be provided for the entire complex.
- b. Moisture sensor, drip irrigation and sprinkler systems to ensure conservation of water.

#### **1.12.5. Treatment Plant for Water bodies**

- a. All water bodies shall have water treatment plant to ensure crystal clear water. The water bodies shall have LED lighting and Jets/Fountains.

#### **1.12.6. Modular Rain Water Harvesting**

- a. Modular type rain water harvesting shall be provided for the minimum capacity of 12,400 Cu. m for the present scope of work.

#### **1.12.7. Internal plumbing in buildings**

- a. . Concealed pipes to be in Stainless Steel (grade 304).



- b. Exposed pipes shall be of G.I. of medium quality.
- c. Rain water pipes shall be of ductile iron with syphonic catch basins.
- d. Sanitary ware and faucets for all Dignitaries toilets shall be sensor controlled.
- e. Urinals in all toilets shall be sensor controlled.
- f. Domestic Hot water supply for the Convention centre shall be at 55°C and for kitchens at 80°C.
- g. Single lever fixtures with mixtures in Convention Centre for all wash hand basin, kitchens and for staff bathrooms.
- h.
- i. Miscellaneous equipments viz hand dryers, air purifiers etc. as specified.

**1.12.8. Soil and waste pipes**

- a. Heavy cast iron as per IS 3989
- b. C.I LA pipes from kitchens to grease trap.
- c. Grease Trap for all kitchens.

All design, drawings, detailing, materials & equipment along with technical submittals shall be approved by Employer before procurement by the EPC Contractor.

**1.13. Mechanical Services:**

**1.13.1. HVAC**

- a. District Cooling system shall be provided for the entire complex i.e. for all Exhibition Halls, Convention Centre, Arena and Mixed use developments and District heating shall only be provided for the all the Hotels and Convention Centre.
- b. Chillers (2000TR: 5 working +1 standby), Cooling towers 2400 TR x 5 + 1 nos, Condenser water pipe between plant room to cooling tower, location above DG set for 28000 TR (maximum pipe size 1200 mm dia).
- c. Providing & installation of minimum four (04) nos ( 3 working + 1 standby). Heat pumps of capacity 800 KW.
- d. All HVAC headers shall be designed & installed for 28,000 TR.
- e. Maximum pipe size 1200 mm dia. to be considered for main headers.
- f. HVAC pipes in service gallery: Chilled water pipes of 1200 mm dia / 500 mm dia.
- g. Hot water pipes 300 mm dia / 200 mm dia.
- h. Providing and installation of Air Handling Units of above 6000 CFM with VFD, energy recovery wheel, PHI cells, mixing boxes and IE2 motors.

**Note: Convention Halls (Main) AHUs with reheating coils to maintain RH.**

- i. HVAC ducting shall be G.I./Fabric/MS (for Kitchen exhaust)
- j. Controls of the HVAC system shall be through IBMS.
- k. Mechanical ventilation shall be as per NBC-2016 to comply with fire requirements and ventilation standards, as approved by Delhi Fire Service.
- l. Smoke Extraction in basement parking areas and in Exhibition Halls, Convention Centre shall be as per NBC-2016 to comply with fire requirements and ventilation standards, as approved by Delhi Fire Services.
- m. Mechanical ventilation shall also be provided for all utilities room in basement of Exhibition Hall 3 and service gallery.

**1.13.2. Internal air conditioning distribution**

- a. Tertiary pumps, PHEs along with all necessary HVAC equipment shall be provided in all energy transfer stations for all buildings except for ancillary buildings.

- b. All design, drawings, detailing, materials & equipment along with technical submittals shall be approved by Employer before procurement by the EPC Contractor.

**1.13.3. Fire Fighting**

- a. Centralized storage pumping and piping system for the complex.  
b. Underground tanks 2 x 400 KL; as approved by Delhi Fire Service (DFS)  
c. Overhead tank 30 KL on each building.  
d. Two (02) Sets of fire pumps as per NBC-2016 shall be provided at centralized fire plant room.  
e. Piping network of 200mm dia. MS heavy duty pipes with isolation valves for sprinkler systems, yard hydrant and internal hydrant in service gallery.  
f. 150mm dia. pipe yard hydrant network around the buildings with yard hydrant at 45m interval.  
g. All buildings including service gallery with sprinkler systems.  
h. Water curtains for compartmentation of basement. Compartmentation of floors above ground shall be as per NBC 2016. Drencher systems for trusses.  
i. Clean and inert gas for protection of electrical installation.  
j. Fire extinguisher CO2 and ABC in all buildings.  
k. Firefighting arrangements shall be provided for HSD Pipe Network and HSD tank.  
l. All design, drawings, detailing, materials & equipment along with technical submittals shall be approved by Employer before procurement by the EPC Contractor.

**1.13.4. PNG Network**

- a. Minimum 50 mm dia MS pipes enclosed in brick work to be laid in service gallery with isolation valves in coordination with and as approved by PNG distributors/Indraprastha Gas Limited - Delhi.  
b. All design, drawings, detailing, materials & equipment along with technical submittals shall be approved by Employer before procurement by the EPC Contractor.

**1.14. Pneumatic Solid Waste Management System and Compost Plant,**

- Pneumatic Solid Waste Management Plant of capacity minimum 35 Ton
- Compost plants minimum 2 nos. of 5 Ton capacity each.
- Minimum 500 mm dia MS pipes with isolation valves and blanking flanges in service gallery for connecting inlet points.
- 450 mm dia Stainless Steel (304 grade) garbage chute with stainless steel hoppers from kitchens to inlet points.
- Temporary waste collection chambers.
- Organic and inorganic inlet points at convenient points as specified
- Loader and trucks suitable for transporting containers 2 nos., 2 Ton LCV-1 no. as specified.
- Mechanical ventilation for the plant room
- Air conditioning for the exhausters' room.
- Structural works viz stairs and platforms for erecting the plant.
- All design, drawings, detailing, materials & equipment along with technical submittals shall be approved by Employer before procurement by the EPC Contractor.

**1.15. Underground Walkway From Metro Station**

Considering the huge Footfall from the proposed DMRC Metro Station within the Mixed Use Development (MUD), a dedicated pedestrian Tunnel Walkway is proposed to Open into the Grand Foyer in between the Exhibition Hall-1 and the Convention Centre Building.

The construction of the Metro Station and this walkway tunnel is not part of the project. However, the EPC Contractor has to co-ordinate his works with the DMRC EPC Contractor for this during the construction phase to co-ordinate the various entry/exits from the Metro Station and the various entry/exits from this walkway to the following locations:

- 1.15.1. In Grand Foyer near Exhibition Hall-1,
- 1.15.2. In/near Grand Foyer near Exhibition Hall-3,
- 1.15.3. Near the proposed ARENA building,
- 1.15.4. Emergency/Fire Exits along the length of this Tunnel walkway.

#### **1.16. Mixed Use Development (MUD) site**

The Mixed Use Development (MUD) portion of the Site is not a part of scope for this project, except for the following works:

- road network serving to MUD
- Planning and Construction of the Service Tunnel within this part,
- Development of Open/Green areas around and in between the entry /exit points to the Metro Station.
- Development of the Open Area as demarcated for Infrastructural Development in Phase-1 and as shown in Tender drawings.

Other than the above works, this part of the Site shall be demarcated and fenced by the EPC Contractor for any further suitable action by DMICDC.

The EPC Contractor shall refer to all the Tender Documents, Technical Specifications, The Design Basis Reports, Tender Design Drawings, The Design Intent Reports, etc. for complete execution of work under Phase-I.

It may be noted that the Design Intent Reports indicate the proposed planning of the entire project, including future phases, the Design process undertaken to arrive at this and also the design intent proposed for the project. In case of any variation between the Design Intent Reports and the Technical Specifications, the Technical Specifications and Design Basis Report will overrule and prevail.

#### **1.17. Approvals Obtained**

The Employer has already obtained the following approval/clearances:-

- a) Layout plan from South Delhi Municipal Corporation.
- b) Permissible height clearance from AAI.
- c) Environmental Clearance from MoEFCC.
- d) Consent from BSES for Power load.
- e) Consent from Delhi Jal Board for water connection

#### **1.18. Approvals to be obtained by the EPC Contractor**

The following activities would be included in the Scope of Works of the EPC Contractor.

- a) Obtaining all Pre-Construction Approvals including but not limiting to building plan approvals and fire approvals required to commence construction and all Post Construction Approvals required enabling Occupancy and Completion of Works.
- b) Obtaining Employer/PEAC Approval for all Structural construction drawings and details before commencement of respective works including structural designs duly vetted by I.I.T. or other institutions of national repute, including obtaining Structural Safety certificate from the institute of national repute.
- c) Obtaining required 3rd Party approvals for all bought out items, from Employer/PMC. Inspection of imported items shall be mandatory, prior to dispatch from factory, by international agencies as per approval of employer. The cost of inspection in India and abroad shall be borne by the EPC Contractor.
- d) Obtaining IGBC Campus Platinum Rating (Global Leadership) for the designated scope of the project,
- e) Coordination with Delhi Jal Board and BSES for releasing water and power connection.
- f) Completion Certificate from South Delhi Municipal Corporation (SDMC).
- g) No Objection Certificate from Pollution Control Board.

**1.19. Area Statement for Phase I construction to be undertaken as part of Scope of work.**

Programme Components		Total Built up area approx. (Sq.m.)
<b>Main Buildings :</b>		
1.	Convention Centre	73,195
2.	Exhibition Hall-1 with Grand Foyer component	59,301
3.	Exhibition Hall- 2 with Grand Foyer component	45,729
<b>Total</b>		<b>178,094</b>
<b>Services Buildings and Basements :</b>		
1.	Services Area under Exhibition Hall-3	35,341
2.	Services Buildings	12,781
	DG Set Room	8,247
	ESS-1 building	2,088
	ESS-2 Building	2,088
	Fire Station	358
3.	Basements under Grand Foyer	96,767
4.	Basements adjoining the Convention Centre	45,465
<b>Total</b>		<b>190354</b>